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PTO/SB/05 (08-00)

Approved for use through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.**UTILITY
PATENT APPLICATION
TRANSMITTAL**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No. IPO-P1380

First Inventor Fujii et al.

Title CAMERA

Express Mail Label No. EL703381174US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☐ Applicant claims small entity status.
See 37 CFR 1.27.
3. ☒ Specification [Total Pages 29]
(preferred arrangement set forth below)
- Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 4]
5. Oath or Declaration [Total Pages 3]
- a. ☒ Newly executed (original or copy)
Copy from a prior application (37 CFR 1.63 (d))
(for continuation/divisional with Box 17 completed)
- b. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
named in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76

ADDRESS TO:Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

7. ☐ CD-ROM or CD-R in duplicate, large table or
Computer Program (Appendix)
8. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
- a. ☐ Computer Readable Form (CRF)
- b. Specification Sequence Listing on:
- i. ☐ CD-ROM or CD-R (2 copies); or
 - ii. ☐ paper
- c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☒ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(b) Statement of Power of Attorney
(when there is an assignee)
11. ☐ English Translation Document (if applicable)
12. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
13. ☒ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Other:

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No. _____ / _____

Prior application information: Examiner _____ Group / Art Unit _____

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.**18. CORRESPONDENCE ADDRESS**☐ Customer Number or Bar Code Label

3624

or ☐ Correspondence address below

Name

Volpe and Koenig, P.C.

Address

City

State

Zip Code

Country

Telephone

Fax


Name (Print/Type)

Louis Weinstein, Esquire

Registration No. (Attorney/Agent)

20,477

Signature



Date October 24, 2000

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PTO
09/694944

10/24/00

Volpe and Koenig, P.C. Revision of PTO/SB/17 (08-00)

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09/694944

10/24/00

**FEE TRANSMITTAL
for FY 2000**

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$ 830)**Complete if Known**

Application Number	Not Yet Known
Filing Date	Not Yet Known
First Named Inventor	Fujii et al.
Examiner Name	Not Yet Known
Group Art Unit	Not Yet Known
Attorney Docket No.	IPO-P1380

METHOD OF PAYMENT (check one)

- 1.
- ☐
- The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number	22-0493
Deposit Account Name	Volpe and Koenig, P.C.

- ☒
- Charge Any Deficiency or Credit any Overpayment in the Total Fees Associated with this Communication
-
- ☐
- Applicant claims small entity status. See 37 CFR 1.27

- 2.
- ☒
- Payment Enclosed:**

☒ Check ☐ Credit card ☐ Money Order ☐ Other
FEE CALCULATION**1. BASIC FILING FEE**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
101 710	201 355	Utility filing fee	710
106 320	206 160	Design filing fee	
107 490	207 245	Plant filing fee	
108 710	208 355	Reissue filing fee	
114 150	214 75	Provisional filing fee	

SUBTOTAL (1) (\$ 710)**2. EXTRA CLAIM FEES**

Total Claims	Extra Claims	Fee from below	Fee Paid
18	20** = 0	0	0
4	3** = 1	80	80

**or number previously paid, if greater; For Reissues, see below

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
103 18	203 9	Claims in excess of 20
102 80	202 40	Independent claims in excess of 3
104 270	204 135	Multiple dependent claim, if not paid
109 80	209 40	** Reissue independent claims over original patent
110 18	210 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ 80)**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
105 130	205 65	Surcharge - late filing fee or oath	
127 50	227 25	Surcharge - late provisional filing fee or cover sheet	
139 130	139 130	Non-English specification	
147 2,520	147 2,520	For filing a request for <i>ex parte</i> reexamination	
112 920*	112 920*	Requesting publication of SIR prior to Examiner action	
113 1,840*	113 1,840*	Requesting publication of SIR after Examiner action	
115 110	215 55	Extension for reply within first month	
116 390	216 195	Extension for reply within second month	
117 890	217 445	Extension for reply within third month	
118 1,390	218 695	Extension for reply within fourth month	
128 1,890	228 945	Extension for reply within fifth month	
119 310	219 155	Notice of Appeal	
120 310	220 155	Filing a brief in support of an appeal	
121 270	221 135	Request for oral hearing	
138 1,510	138 1,510	Petition to institute a public use proceeding	
140 110	240 55	Petition to revive - unavoidable	
141 1,240	241 620	Petition to revive - unintentional	
142 1,240	242 620	Utility issue fee (or reissue)	
143 440	243 220	Design issue fee	
144 600	244 300	Plant issue fee	
122 130	122 130	Petitions to the Commissioner	
123 50	123 50	Petitions related to provisional applications	
126 240	126 240	Submission of Information Disclosure Stmt	
581 40	581 40	Recording each patent assignment per property (times number of properties)	40
146 710	246 355	Filing a submission after final rejection (37 CFR § 1.129(a))	
149 710	249 355	For each additional invention to be examined (37 CFR § 1.129(b))	
179 710	279 355	Request for Continued Examination (RCE)	
169 900	169 900	Request for expedited examination of a design application	

Other fee (specify) _____

* Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 40)**SUBMITTED BY****Complete (if applicable)**

Name (Pnn/Type)	Louis Weinstein, Esquire	Registration No (Attorney/Agent)	20,477	Telephone	215-568-6400
Signature	<i>Louis Weinstein</i>	Date	10/24/00		

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Express Mail Label No. EL703381174US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Fujii et al.

Application No.: Not Yet Known

Our File: IPO-P1380

Filed: Not Yet Known

Date: October 24, 2000

For: CAMERA

Group: Not Yet Known

Examiner: Not Yet Known

PRELIMINARY AMENDMENT

Box Patent Application
Commissioner for Patents
Washington, D.C. 20231

Sir:

Please amend the application as follows.

IN THE SPECIFICATION

On page 2, line 17, change "wholly" to --greatly--.

On page 2, line 21, change "shortage of the" to --reduced--.

On page 7, lines 7 and 8, change "griped" to --gripped--.

On page 7, line 11, change "an" to --and--.

On page 7, line 16, change "putting" to --receiving--.

On page 7, line 21, change "putting" to --receiving--.

On page 8, line 17, after "of" insert --a--.

On page 11, line 4, change "the cover" to --covering--.

On page 12, line 6, delete "in".

On page 12, line 7 change "the same way" to --similar to camera embodiment 10--.

On page 12, line 10, change "putting" to --receiving--.

On page 12, line 13, change "an" to --and--.

On page 13, line 4 after "of" insert --a--.

On page 13, line 8, change "close" to --closed--.

On page 15, line 17 after "of" insert --a--.

IN THE CLAIMS

1. (Amended) A camera, comprising:

a photographing lens barrel arranged at one end side of a camera body,

a grip portion arranged at [the other] another end side of the camera body and projecting forward from the camera body,

5 a window for a ranging unit, arranged at [the] an upper side of [the] a front face of the camera body and in the camera body between the grip portion and the photographing lens barrel, and

a finger-restricting portion arranged in the camera body below the window for the ranging unit, one end portion of the finger-restricting portion being formed to project from the grip portion toward the photographing lens barrel,

wherein [this] said finger-restricting portion restricts positions of a user's fingers when the user grips [the] a front portion of the grip portion.

2. (Amended) The camera according to claim 1,

wherein at least one portion of the window for the ranging unit, positioned at [the] one side of the grip portion, is arranged over the finger-restricting portion projecting toward [the] a side of the photographing lens barrel adjacent to said finger-restricting portion.

3. (Amended) The camera according to claim 1,

wherein a cut-off portion having a plane substantially parallel to a plane perpendicular to [the] an optical [axial] axis of the photographing lens is positioned near a portion projecting toward [the] an adjacent side of the photographing lens barrel in the finger-restricting portion, and the window for the ranging unit is arranged so that one portion thereof invades into the cut-off portion.

4. (Amended) The camera according to claim 1,

which comprises a first focusing means disposed correspondingly to the window for the ranging unit, and a second focusing means for outputting focusing signals [on the basis of] responsive to subject light projected into the photographing lens barrel.

5. (Amended) The camera according to claim 1,

which is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, and

which further comprises an active type first focusing means disposed correspondingly to the window for the ranging unit,

a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device, and

a control means for controlling the first focusing means and the second focusing means [on the basis of] responsive to a subject state and a photographing state.

7. (Amended) A camera comprising:

a photographing lens barrel arranged at one end side of a camera body,

a grip portion arranged at [the other] another end side of the camera body and projecting forward from the camera body,

5 a projecting portion integrated so as to project upward from [the] an upper face at [the] a side of the one end portion of the camera body, at which the photographing lens barrel is arranged,

an electronic flash unit arranged at the projecting portion, and

10 a window for a ranging unit, arranged near a base portion of the photographing lens barrel and on [the] a front portion of the projecting portion.

8. (Amended) The camera according to claim 7,

wherein the electronic flash unit is supported by an electronic flash lid [making] comprising one portion of the projecting portion when the electronic flash unit is not used, and light can be emitted by popping-up of the electronic flash lid.

9. (Amended) The camera according to claim 7,

wherein the electronic flash unit is supported by an electronic flash lid [making] comprising one portion of the projecting portion when the electronic flash unit is not used; the electronic flash lid covers the window for the ranging unit when the electronic flash unit

5 is not used; and the electronic flash lid pops up when the electronic flash unit is used, so as to permit emission of light from the electronic flash unit and focusing.

10. (Amended) The camera according to claim 7,

wherein the electronic flash unit [makes] comprises one portion of the projecting portion when the electronic flash unit is not used; and the electronic flash unit pops up when the electronic flash unit is used, so as to emit light.

11. (Amended) The camera according to claim 7,

which is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, and

5 which further comprises an active type first focusing means disposed correspondingly to the window for the ranging unit,

a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device, and

a control means for controlling the first focusing means and the second focusing means [on the basis of] responsive to a subject state and a photographing state.

12. (Amended) The camera according to claim [7] 11,

wherein the subject state is subject brightness or contrast, and the photographing state is a photographing state that a zooming ratio is adjusted, or photographing at close range state, and the control means selects and controls, on the basis of these, one of the first focusing means and the second focusing means.

13. (Amended) A camera comprising:

a photographing lens barrel arranged at one end side of a camera body,

a grip portion arranged at [the other] another end side of the camera body and projecting forward from the camera body,

a projecting portion integrated so as to project upward from [the] an upper face at [the] a side of the one end portion of the camera body, at which the photographing lens barrel is arranged,

a lid portion which an electronic flash unit and a ranging unit are arranged at, which [makes] comprises one portion of the projecting portion when the lid portion is not used, and which pops up when the lid portion is used [so as] to expose the electronic flash unit and the ranging unit to positions where they can be used.

14. (Amended) The camera according to claim 13,

wherein the electronic flash unit and the ranging unit are arranged so that when the lid portion pops up, the ranging unit is positioned nearer [the] an upper face of the camera body than the electronic flash unit.

15. (Amended) The camera according to claim 13,

which is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, and

which further comprises an active type first focusing means disposed correspondingly to the window for the ranging unit,

a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device, and

a control means for controlling the first focusing means and the second focusing means [on the basis of] responsive to a subject state and a photographing state.

16. (Amended) A camera, comprising:

a photographing lens barrel arranged at one end side of a camera body,

a grip portion arranged at [the other] another end side of the camera body and projecting forward from the camera body,

5 a projecting portion integrated so as to project upward from [the] an upper face at [the] a side of the one end portion of the camera body, at which the photographing lens barrel is arranged,

an electronic flash unit arranged in [the] a front portion of the projecting portion, and a ranging unit arranged in the front portion of the projecting portion.

17. (Amended) The camera according to claim 16,

wherein the electronic flash unit arranged in the front of the projecting portion is [arranged over] positioned above the ranging unit.

18. (Amended) The camera according to claim 16,

which is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, and

5 which comprises an active type first focusing means disposed correspondingly to the window for the ranging unit,

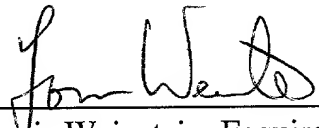
Applicant: Fujii et al.
Application No.: Not Yet Known

a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device, and

a control means for controlling the first focusing means and the second focusing means [on the basis of] responsive to a subject state and a photographing state.

Respectfully submitted,

Fujii et al.

By 
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LW/tc

CAMERA

This application claims benefit of Japanese Application No. Hei11-333235 filed in Japan on November 24, 1999 and Japanese Application No. 2000-294539 filed in Japan on September 27, 2000, the contents of which are incorporated by this reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a camera having a ranging unit, or an arrangement thereof.

2. Description of the Related Art

In conventional compact cameras, a ranging unit for active AF (automatic focusing) having therein an IRED (infrared ray emitting diode) and a PSD (position sensitive device) is usually used. In these compact cameras, the aperture of their photographing lenses is relatively smaller and shorter than the size of their camera bodies. Therefore, the position where the above-mentioned ranging unit for AF is mounted is hardly limited and this unit can be arranged at an appropriate position on the front of the cameras. It is necessary that a light flux emitted from the front and a light flux which the front receives are not blocked off by a photographer's hand or the like at the time of ranging.

Conventional electronic cameras in which a CCD, which is an image sensing device whose pixel number is large, is used are high-class cameras suitable for semi-professionals.

Therefore, photographing optical systems which have a high zooming ratio and are bright are selected. For this reason, their photographing lens barrel becomes large-sized and long so that the occupation ratio of the photographing lens barrel in the front of the camera body is large and the lens barrel is considerably projected forward from the camera body.

In AF processing of the above-mentioned conventional electronic cameras, a so-called passive contrast AF, as described in the following, has been exclusively used. The position of their focusing lens is changed and then image signals of a subject from their image sensing device are used at every changed position to compare spatial frequencies. In this way, a focusing position is decided.

However, the contrast AF in the above-mentioned conventional electronic cameras is hard to deal with a subject environment having low contrast. That is, in dark places, the contrast therein is wholly lowered; therefore, a contrast peak value, which can cause the lens to be positioned in focus, cannot be detected with sufficient accuracy. Thus, in many cases, the focus of the lens cannot be accurately adjusted. It can be imagined that in order to compensate for shortage of the brightness of the subject, an electronic flash bulb for multi-ranging is intermittently set off. However, this manner is impractical.

Even if the brightness of a subject is sufficient, the focus cannot be accurately adjusted in the case that the contrast itself of the subject is insufficient in a focusing area. In

the contrast AF at the time of taking a photograph with a high zooming ratio or taking a close-up photograph, an inconvenience that a focusing time becomes long because of a large movement distance of the lens arises.

Incidentally, in the case of conventional electronic cameras into which a ranging unit is integrated wherein a lens barrel is large-sized and long and a camera body does not project at the left hand side of the lens barrel (at the side opposite to a grip), it is difficult that the ranging unit is arranged around the lens barrel of the camera body or at the left side of the camera body.

Furthermore, the lens barrel projects out and the lens barrel is supported by a left hand at the time of taking a photograph; therefore, the space where the ranging unit can be arranged gets smaller in the front of the camera body, as compared with conventional cameras wherein the camera body is held at the left side thereof (as seen from a subject) by a left hand. Thus, it is difficult to arrange the ranging unit.

Hitherto, there have been known no cameras wherein the above-mentioned focusing unit is conveniently arranged in the vicinity of an electronic flash unit.

OBJECT AND SUMMARY OF THE INVENTION

The present invention has been made in order to overcome the above-mentioned inconveniences. Thus, an object of the present invention is to provide a compact camera making it possible to arrange a ranging unit at an appropriate position

of a camera body, for example, even if a lens barrel to be mounted has a large aperture, whereby the camera is easy to handle. Another object of the present invention is to provide a camera which makes it possible to select focusing data from a focusing manner by means of the above-mentioned ranging unit or from another focusing manner and take in the data, and which can be made compact.

An aspect of the camera of the present invention is a camera comprising a photographing lens barrel arranged at one end side of a camera body; a grip portion arranged at the other end side of the camera body and projecting forward from the camera body; a window for a ranging unit, arranged at the upper side of the front face of the camera body and in the camera body between the grip portion and the photographing lens barrel; and a finger-restricting portion arranged in the camera body below the window for the ranging unit, one end portion of the finger-restricting portion being formed to project from the grip portion toward the photographing lens barrel; wherein this finger-restricting portion restricts positions of user's fingers when the user grips the front of the grip portion.

Another aspect of the present invention is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, the electronic camera comprising a photographing lens barrel arranged at one end side of a camera body; a grip portion arranged at the other end side of the camera body and projecting forward from the camera body; a window for a ranging unit, arranged

at the upper side of the front face of the camera body and in the camera body between the grip portion and the photographing lens barrel; and a finger-restricting portion arranged in the camera body below the window for the ranging unit, one end portion of the finger-restricting portion being formed to project from the grip portion toward the photographing lens barrel; an active type first focusing means disposed correspondingly to the window for the ranging unit; a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device; and a control means, wherein the control means selects and controls either one of the first focusing means and the second focusing means on the basis of a subject state and a photographing state.

Other features and advantages of the present invention will become clear from the following description.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a perspective view of an electronic camera of a first embodiment of the present invention.

FIG. 2 is a front view of the electronic camera of the first embodiment that is held when a photograph is taken.

FIG. 3 is a perspective view of an electronic camera of a second embodiment of the present invention.

FIG. 4 is a perspective view of important elements of an electronic camera wherein a first modification is applied to a ranging unit used in the electronic camera of the second embodiment.

FIG. 5 is a perspective view of important elements of an electronic camera wherein a second modification is applied to a ranging unit used in the electronic camera of the second embodiment.

FIG. 6 is a perspective view of important elements of an electronic camera wherein a third modification is applied to a ranging unit used in the electronic camera of the second embodiment.

FIG. 7 is a perspective view of important elements of an electronic camera wherein a fourth modification is applied to a ranging unit used in the electronic camera of the second embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the attached drawings, embodiments of the present invention will be described hereinafter.

FIG. 1 is a perspective view of an electronic camera of a first embodiment of the present invention. FIG. 2 is a front view of this electronic camera that is held when a photograph is taken. In the undermentioned description, the right side and left side of the camera represent the sides when seen from the front side of a lens (from the side of a subject).

The electronic camera 10 of the present embodiment is an electronic camera having therein a CCD 8 as an image sensing device. A grip portion 1a is arranged at the left side of a camera body 1. A photographing lens barrel unit (hereinafter referred to as a lens barrel unit), which projects out at the

right side and has a large aperture, is arranged at the right side of the camera body 1. The right side of the lens barrel unit 2 has no projecting portion of the camera body 1.

Therefore, in the case that the present camera 10 is held by a photographer when a photograph is taken, the photographer holds the camera in such a manner that the circumference and the bottom of the lens barrel unit 2 are gripped by the left hand and the grip portion 1a is gripped by the right hand, as shown in FIG. 2.

In the electronic camera 10 of the present embodiment, a release switch button 4, an operation switch buttons 5 through which operations, such as setup of a mode, are performed, and an LCD display portion 7 are arranged at the upper side of the grip portion 1a side of the camera body 1. An eyepiece unit 6 of a finder is arranged at the upper side of the lens barrel unit 2 side of the camera body 1.

The grip portion 1a has a semicircular convex grip front portion 1f, a finger-putting concave portion 1b positioned at the upper portion of the front portion, a peak portion 1c which is at the right side, that is, at the side of the lens barrel unit 2, of the upper side of the finger-putting concave portion 1b and functions as a finger restricting portion for restricting upward movement of the finger, and a grip upper front portion 1d, over the peak portion 1c, which invades into a cut-off concave portion 1g wherein a portion contacting the front of the camera body 1 is cut off. The grip upper front portion 1d is made by a plane perpendicular to an optical axis O of the photographing

lens, and the face making the cut-off concave portion 1g, which is formed by cutting off to make the grip upper front portion 1d, is a plane which is substantially parallel to the optical axis O.

A ranging window (window for the ranging unit) 14 is fitted up into a front portion 1e of the camera body 1 in the state that a part of the window 14 invades into the cut-off concave portion 1g of the grip upper front portion 1d. A ranging unit 11, which is a detector in an active AF manner as a first focusing means, is arranged inside the ranging window 14.

The ranging unit 11 is composed of an IRED 12, which is an infrared ray emitting element (light projecting means), and a PSD 13, which is a position sensitive element (light receiving means). The light which is emitted from the IRED 12 and then reflected on a subject is projected onto the PSD 13 and then data on the distance from the subject to the lens is measured on the basis of trigometrical survey.

The lens barrel unit 2 has therein a photographing lens 3 which has an optical axis O and can be focusing-driven. The CCD 8, which is an image sensing device, and a controller are arranged behind the photographing lens 3. An image of the subject taken in through the photographing lens 3 is photoelectrically converted to electrical signals (image signals) by means of the CCD 8 and then taken in the controller having therein a CPU and the like.

A contrast detector in a focus detecting manner, as a second focusing means, which the above-mentioned controller has therein

detects data on the contrast of the subject on the basis of the image signals of the taken-in subject image so as to focusing-drive the photographing lens 3 by automatic focusing processing in the contrast AF manner.

The controller focusing-drives the photographing lens 3 onto a focusing position on the basis of either of the data on the distance from the subject detected by means of the ranging unit 11 or the data on the focusing position detected by means of the contrast detector.

In the electronic camera 10 having the above-mentioned structure, whether the AF processing in the ranging manner by means of the ranging unit 11 or the contrast AF manner by means of the contrast detector is adopted as the AF (automatic focusing) processing of the photographing lens is selected automatically or manually depending on the state of the subject, photographing conditions and the like. The above-mentioned state of the subject is a state that the brightness of the subject is high or low, or a state that the subject has a high contrast or a low contrast. The above-mentioned photographing conditions are conditions as to whether a photograph is taken with a high zooming ratio or not, whether photographing at close range is taken or not, and the like.

In the case that the brightness of the subject is high or the like case, on the basis of the image signals of the subject image, which are obtained through the CCD 8, contrast data are detected in the above-mentioned contrast detector to drive the photographing lens 3 to a focusing position.

On the other hand, in the case that the brightness of the subject is low or the like case, a ranging beam is projected from the IRED 12 to the subject through the ranging window 14, and then the PSD 13 receives a resultant reflection beam. The controller calculates the distance to the subject from a position where the reflection beam has received. The photographing lens 3 is driven up to a focusing position corresponding to the distance from the subject.

The image signals of the subject image obtained by means of the CCD 8 in the above-mentioned lens-focused state are image-processed in the controller, and then the imaged-processed signals are memorized as photographed-image data in a memory.

In the electronic camera 10 of the first embodiment, automatic focusing can be attained by the contrast AF processing or the ranging processing by means of the ranging unit. In the case that accurate and speedy focusing operation cannot be attained by the contrast AF processing, depending on the state of the brightness of the subject or photographing conditions, the contrast AF processing is switched to the ranging processing by means of the ranging unit, so as to adjust the focus.

However, in the case that the lens barrel unit 2 has a large aperture, the right side of the barrel unit 2 has no projecting portion of the camera body 1. Thus, the space where the ranging unit 11 and the ranging window 14 are arranged is limited to the upper side of the grip portion 1a.

Thus, in the electronic camera 10 of the present embodiment, the ranging window 14 is fitted to the front portion 1e of the

camera body by cutting off the grip upper front portion 1d as described above. Furthermore, the peak portion 1c for restricting the movement of the finger toward the upper of the grip portion 1a is formed so that the cover of the ranging window 14 with the fingers of the right hand is prevented when the camera body 1 is held as shown in FIG. 2. Accordingly, it is possible to detect certainly the distance from the subject by the automatic focusing by means of the ranging unit 11 other than the contrast AF. As a result, photographs can easily be taken.

In the electronic camera 10 of the first embodiment, the ranging window 14 is arranged at the cut-off portion in the grip upper front portion 1d over the peak portion 1c. However, if the ranging window 14 is arranged at a portion which is not cut off in the grip upper front portion 1d, the same advantages can be obtained.

In the electronic camera 10 of the first embodiment, the cut-off concave portion 1g in the grip upper front portion 1d is made as a plane parallel to the photographing optical axis O. However, if this cut-off concave portion 1g is made as a plane which becomes slightly wider toward the subject and is somewhat inclined, ranging ability can be improved.

The following will describe an electronic camera of a second embodiment of the present invention.

FIG. 3 is a perspective view of the electronic camera of the second embodiment of the present invention. This electronic camera 20 is different from the electronic camera 10 of the first embodiment in positions where their ranging units are arranged.

In the camera 20, an electronic flash unit is arranged near the ranging unit. Other elements and structures are the same as in the first embodiment, and the same reference numbers are attached to them. Hereinafter, different elements and structures will mainly be described.

In the electronic camera 20 of the second embodiment, in the same way, a photographing lens 3 having a large aperture is used as a lens barrel unit 2. The right side of a camera body 21 has no projecting portions. In a grip portion 21a at the left side of the camera body 21, a finger-putting concave portion 21b is made.

In the same way as in the first embodiment, a release switch button 4, an operation switch buttons 5 through which operations, such as setup of a mode, are performed, and an LCD display portion 7 are arranged at the upper side of the grip portion 21a side of the camera body 21 of the electronic camera 20. An upper projecting portion 21c is made in the camera body 21 behind the lens barrel unit 2.

A ranging unit 22 and a ranging window (a window for the ranging unit) 25 are arranged at the lower front of the projecting portion 21c. An electronic flash lid 26, which has therein an electronic flash unit 27 and can be opened and closed, are arranged at the upper front of the projecting portion 21c. Moreover, a finder eyepiece unit 6 is fitted to the back face of the projecting unit 21c.

The ranging unit 22 is a detector in an AF manner as a first focusing means. The unit 22 is composed of an IRED 23,

which is an infrared ray emitting element as a light projecting means, and a PSD 24, which is a position detecting element as a light receiving means. The unit 22 can detect data on the distance from a subject on the basis of trigometrical survey.

The electronic flash unit 27 which the electronic flash lid 26 has therein comprises an electronic flash window 29, an electronic flash emitting tube 28, and the like. When the electronic flash lid 26 is at a storage position (close position), the electronic flash unit 27 is stored onto the upper side of the position where the ranging unit 22 is arranged. When the electronic flash lid 26 stands up (opens), the electronic flash unit 27 moves to a popup position at which flash can emit light.

The lens barrel unit 2 has therein a photographing lens 3 which can be focusing-driven in the same way as the electronic camera 10 of the first embodiment. A CCD 8, which is an image sensing device, and a controller are arranged behind the photographing lens 3 and inside the camera body 21. Data on a subject image, which are photoelectrically conversed to electric signals (image signals) in the CCD 8, are taken in the controller having therein a contrast detector.

In the present electronic camera 20 having the above-mentioned structure, focusing processing is performed in the same way as the electronic camera 10 of the first embodiment. In the electronic camera 20, the electronic flash lid 26 can be opened to make the electronic flash unit 27 into a popup state. In this way, the electronic flash window 29 is exposed so that a photograph can be taken with a flare of flashlight.

According to the electronic camera 20 of the second embodiment, as an automatic focusing manner, the ranging processing by means of the ranging unit or the contrast AF processing can be selected, depending on the state of the brightness of a subject or photographing conditions, in the same way as the electronic camera 10 of the first embodiment. Accurate and speedy focusing operation can be attained. In the present electronic camera 20, the ranging unit 22 and the electronic flash unit 27 are combined and they are fitted to the upper projecting portion 21c, behind the lens barrel unit 2, of the camera body 21. Thus, the space of the camera body 21 can be put to good use. As a result, the camera, in particular the front of the camera body, can be made compact.

In the state that the lens barrel unit 2 is held by the left hand and the grip portion 21a of the camera body is held by the right hand when a photograph is taken, the ranging window 25 of the ranging unit 22 is not covered with the fingers so that focusing can be certainly performed.

The following will describe various variations of the position where the ranging unit is arranged in the electronic camera of the second embodiment.

FIG. 4 is a perspective view of important elements of an electronic camera wherein a first modification of the above-mentioned ranging unit is used. In this electronic camera 40, an upper projecting portion 41c is made on a camera body 41 and behind the lens barrel unit 2 of the electronic camera 20.

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An electronic flash lid 49, which can cover the upper side of the projecting portion 41c and can be rotatably opened and closed, is fitted to the projecting portion 41c. A ranging unit 42 and a ranging window (window for the ranging unit) 45 are arranged over the projecting portion 41c and at the front inside an area which is covered with the electronic flash lid 49 in a storage state (lid-closed state). An electronic flash unit 46 is integrally held in the electronic flash lid 49 and located at a position where this unit 46 stays away from the ranging unit 42 in the lid-closed state. A finder eyepiece unit 6 is arranged at the back side of the projecting portion 41c.

The ranging unit 42 is composed of an IRED 43, which is an infrared ray emitting element (light projecting means) as an active AF detector of a first focusing means, and a PSD 44, which is a position detecting element (light receiving means). The ranging unit 42 can detect data on the distance from a subject on the basis of trigometrical survey. When the electronic flash lid 49 stands up to be at an open position, the ranging window 45 at the front of the ranging unit 42 is exposed so that focusing can be performed.

The electronic flash unit 46 comprises an electronic flash window 48, an electronic flash emitting tube 47, and the like. When the electronic flash lid 49 stands up to be at an open position, the front of the electronic flash window 48 is exposed and opened toward a subject so that electronic flash can be attained.

Other structures are the same as in the electronic camera 20 of the second embodiment, and the same reference numbers are

attached thereto in FIG. 4. For example, the lens barrel unit 2 has therein the photographing lens 3 which can be focusing-driven and has a large aperture. The CCD 8, which is an image sensing device, and the controller are arranged inside the camera body 4 and behind the photographing lens 3.

In the present electronic camera 40 having the above-mentioned structure, in the state that the electronic flash lid 49 is opened, focusing processing is performed in the same way as the electronic camera 20 of the second embodiment. The electronic flash unit 46 is also in the state that light can be emitted, so that a photograph can be taken with a flare of flashlight.

According to the electronic camera 40 wherein the first variation is used, the same effects as the electronic camera 20 of the second embodiment can be produced. Since the ranging window 45 is covered with the electronic flash lid 49 in a normal state, particularly certain protection against dust and the like can be attained. Moreover, the upper portion of the camera body 41 can be made compact since the electronic flash unit 46 and the ranging unit 42 are stored in the electronic flash lid 49.

FIG. 5 is a perspective view of important elements of an electronic camera wherein a second modification of the arrangement of the above-mentioned ranging unit 22 is used. In this electronic camera 50 wherein the present variation is used, a projecting portion 51c is made on a camera body 51 and behind the lens barrel unit 2 in the same manner as the electronic camera 20.

above-mentioned structure wherein the present variation is used, in the state that the electronic flash 59 is stands, focusing processing by means of either the ranging unit 52 or the contrast detector is selected so that the photographing lens 3 is focusing-driven in the same way as in the case of the electronic camera 20 of the second embodiment. When the electronic flash lid 59 stands, the electronic flash unit 56 is in a popup state so that a photograph can be taken with a flare of flashlight.

According to the electronic camera 50 wherein the present variation is used, the same effects as the electronic camera 20 of the second embodiment and the electronic camera 40 wherein the first variation is used can be produced. Since the ranging unit 52 and the electronic flash unit 56 are together integrated into the electronic flash lid 59, the ranging unit 52 and the electronic flash unit 56 can be made particularly compact. Thus, the present embodiment has a remarkable advantage for making the camera body compact.

FIG. 6 is a perspective view of important elements of an electronic camera wherein a third modification of the arrangement of the above-mentioned ranging unit 22 is used. In this electronic camera 60, a projecting portion 61c is made on a camera body 61 and behind the lens barrel unit 2 in the same manner as the electronic camera 20. An electronic flash lid 69, which can cover the upper side of the projecting portion 61c and can be rotatably opened and closed, is fitted to the projecting portion 61c. A finder eyepiece unit 6 is arranged at the back side of the projecting portion 61c.

In the present electronic camera 60 having the above-mentioned structure wherein the present variation is used, in the state that the electronic flash lid 69 stands, focusing processing by means of either the ranging unit 62 or the contrast detector is selected so that the photographing lens 3 is focused in the same way as in the case of the electronic camera 20 of the second embodiment. When the electronic flash lid 69 stands, the electronic flash unit 66 is in a popup state so that a photograph can be taken with a flare of flashlight.

According to the electronic camera 60 wherein the third variation is used, the same effects as the electronic camera 20 of the second embodiment and the electronic camera 40 wherein the first variation is used can be produced. The upper portion of the camera body 61 can be made particularly compact since the electronic flash unit 66 and the ranging unit 62 are stored in the projecting portion 61c of the camera body.

FIG. 7 is a perspective view of important elements of an electronic camera wherein a fourth modification of the arrangement of the above-mentioned ranging unit 22 is used. In this electronic camera 70 wherein the present variation is used, a projecting portion 71c is made on a camera body 71 and behind the lens barrel unit 2 in the same manner as the electronic camera 20.

A ranging unit 72 and a ranging window (window for the ranging unit) 75 are fixed to the lower front of the projecting portion 71c and an electronic flash unit 76 is fixed to the upper front of the projecting portion 71c. A finder eyepiece unit

6 is arranged at the back side of the projecting portion 71c.

The ranging unit 72 is composed of an IRED 73, which is an infrared ray emitting element (light projecting means) as an active AF detector of a first focusing means, and a PSD 74, which is a position sensitive element (light receiving means). The electronic flash unit 76 comprises an electronic flash window 78, a stopper light emitting tube 77, and the like.

Other structures are the same as in the electronic camera 20 of the second embodiment, and the same reference numbers are attached thereto in FIG. 7. For example, the lens barrel unit 2 has therein the photographing lens 3 which can be focusing-driven and has a large aperture. The CCD 8, which is an image sensing device, the controller, the contrast detector and the like are arranged inside the camera body 71 and behind the photographing lens 3.

In the present electronic camera 70 having the above-mentioned structure wherein the present variation is used, focusing processing by means of either the ranging unit 72 or the contrast detector is selected so that the photographing lens 3 is focused in the same way as in the case of the electronic camera 20 of the second embodiment.

According to the electronic camera 70 wherein the fourth variation is used, the same effects as the electronic camera 20 of the second embodiment and the electronic camera 40 wherein the first variation is used can be produced.

The ranging unit in the above-mentioned embodiments and variations may be any unit wherein an element other than the

IREC and the PSD is used if the ranging unit is of an active AF type.

The same advantages, which compensates for weak points of the contrast AF manner, can also be produced by using a ranging unit in a phase difference passive AF manner or the like manner instead of the ranging unit in the active AF manner.

As described above, according to the camera of the present invention, the ranging unit can be arranged onto the front of the camera body even if a lens barrel to be mounted has a large aperture. Moreover, it is possible to provide a compact camera making certain focusing possible without covering the ranging unit with fingers of the hand by which the camera is held. It is also possible to select focusing data not only from the focusing manner by means of the ranging unit but also from another focusing manner and then take in the data. Thus, it is possible to perform more accurate focusing for a wider range of subject conditions, and make the camera compact.

What is claimed is:

1. A camera, comprising:

a photographing lens barrel arranged at one end side of a camera body,

a grip portion arranged at the other end side of the camera body and projecting forward from the camera body,

a window for a ranging unit, arranged at the upper side of the front face of the camera body and in the camera body between the grip portion and the photographing lens barrel, and

a finger-restricting portion arranged in the camera body below the window for the ranging unit, one end portion of the finger-restricting portion being formed to project from the grip portion toward the photographing lens barrel,

wherein this finger-restricting portion restricts positions of user's fingers when the user grips the front of the grip portion.

2. The camera according to claim 1,

wherein at least one portion of the window for the ranging unit, positioned at the side of the grip portion, is arranged over the finger-restricting portion projecting toward the side of the photographing lens barrel.

3. The camera according to claim 1,

wherein a cut-off portion having a plane substantially parallel to a plane perpendicular to the optical axial of the photographing lens is positioned near a portion projecting toward the side of the photographing lens barrel in the

finger-restricting portion, and the window for the ranging unit is arranged so that one portion thereof invades into the cut-off portion.

4. The camera according to claim 1,

which comprises a first focusing means disposed correspondingly to the window for the ranging unit, and a second focusing means for outputting focusing signals on the basis of subject light projected into the photographing lens barrel.

5. The camera according to claim 1,

which is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, and

which further comprises an active type first focusing means disposed correspondingly to the window for the ranging unit,

a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device, and

a control means for controlling the first focusing means and the second focusing means on the basis of a subject state and a photographing state.

6. The camera according to claim 5,

wherein the subject state is subject brightness or contrast, and the photographing state is a photographing state that a zooming ratio is adjusted, or photographing at close range state, and the control means selects and controls, on the basis of these, one of the first focusing means and the second focusing means.

7. A camera comprising:

a photographing lens barrel arranged at one end side of a camera body,

a grip portion arranged at the other end side of the camera body and projecting forward from the camera body,

a projecting portion integrated so as to project upward from the upper face at the side of the one end portion of the camera body, at which the photographing lens barrel is arranged,

an electronic flash unit arranged at the projecting portion, and

a window for a ranging unit, arranged near a base portion of the photographing lens barrel and on the front of the projecting portion.

8. The camera according to claim 7,

wherein the electronic flash unit is supported by an electronic flash lid making one portion of the projecting portion when the electronic flash unit is not used, and light can be emitted by popping-up of the electronic flash lid.

9. The camera according to claim 7,

wherein the electronic flash unit is supported by an electronic flash lid making one portion of the projecting portion when the electronic flash unit is not used; the electronic flash lid covers the window for the ranging unit when the electronic flash unit is not used; and the electronic flash lid pops up when the electronic flash unit is used, so as to permit emission of light from the electronic flash unit and focusing.

10. The camera according to claim 7,

wherein the electronic flash unit makes one portion of

the projecting portion when the electronic flash unit is not used; and the electronic flash unit pops up when the electronic flash unit is used, so as to emit light.

11. The camera according to claim 7,

which is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, and

which further comprises an active type first focusing means disposed correspondingly to the window for the ranging unit,

a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device, and

a control means for controlling the first focusing means and the second focusing means on the basis of a subject state and a photographing state.

12. The camera according to claim 7,

wherein the subject state is subject brightness or contrast, and the photographing state is a photographing state that a zooming ratio is adjusted, or photographing at close range state, and the control means selects and controls, on the basis of these, one of the first focusing means and the second focusing means.

13. A camera comprising:

a photographing lens barrel arranged at one end side of a camera body,

a grip portion arranged at the other end side of the camera body and projecting forward from the camera body,

a projecting portion integrated so as to project upward

from the upper face at the side of the one end portion of the camera body, at which the photographing lens barrel is arranged,

a lid portion which an electronic flash unit and a ranging unit are arranged at, which makes one portion of the projecting portion when the lid portion is not used, and which pops up when the lid portion is used so as to expose the electronic flash unit and the ranging unit to positions where they can be used.

14. The camera according to claim 13,

wherein the electronic flash unit and the ranging unit are arranged so that when the lid portion pops up, the ranging unit is positioned nearer the upper face of the camera body than the electronic flash unit.

15. The camera according to claim 13,

which is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, and

which further comprises an active type first focusing means disposed correspondingly to the window for the ranging unit,

a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device, and

a control means for controlling the first focusing means and the second focusing means on the basis of a subject state and a photographing state.

16. A camera, comprising:

a photographing lens barrel arranged at one end side of a camera body,

a grip portion arranged at the other end side of the camera body and projecting forward from the camera body,

a projecting portion integrated so as to project upward from the upper face at the side of the one end portion of the camera body, at which the photographing lens barrel is arranged,

an electronic flash unit arranged in the front of the projecting portion, and

a ranging unit arranged in the front of the projecting portion.

17. The camera according to claim 16,

wherein the electronic flash unit arranged in the front of the projecting portion is arranged over the ranging unit.

18. The camera according to claim 16,

which is an electronic camera having an image sensing device for converting a subject image made by the photographing lens barrel photoelectrically, and

which comprises an active type first focusing means disposed correspondingly to the window for the ranging unit,

a contrast type second focusing means for outputting focusing signals by use of subject light projected into the image sensing device, and

a control means for controlling the first focusing means and the second focusing means on the basis of a subject state and a photographing state.

ABSTRACT OF DISCLOSURE

An electronic camera having therein a CCD (image sensing device). A lens barrel is mounted on a camera body thereof. As focusing means, this camera has therein a ranging unit in an active AF manner and a contrast detector in a contrast AF manner using subject light from the lens barrel. A grip portion is arranged at the left side (as seen from the subject) of the camera body. A peak portion is arranged over the grip portion. A ranging window for the ranging unit is arranged over the peak portion. When the camera body is held, it is possible to prevent fingers from moving to the front of the ranging window and covering the window by the peak portion. Even if the lens barrel has a large aperture, it is also possible to arrange the ranging unit on the front portion of the camera body.

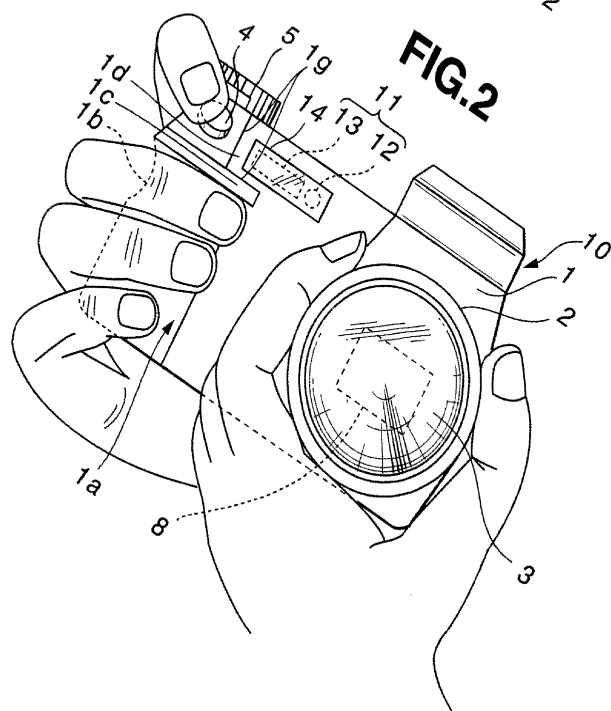
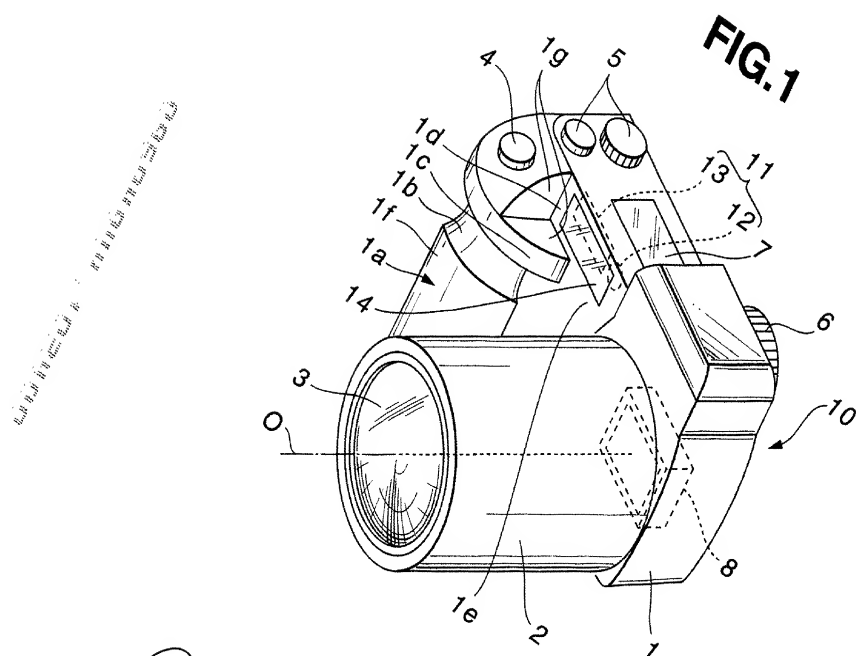


FIG.3

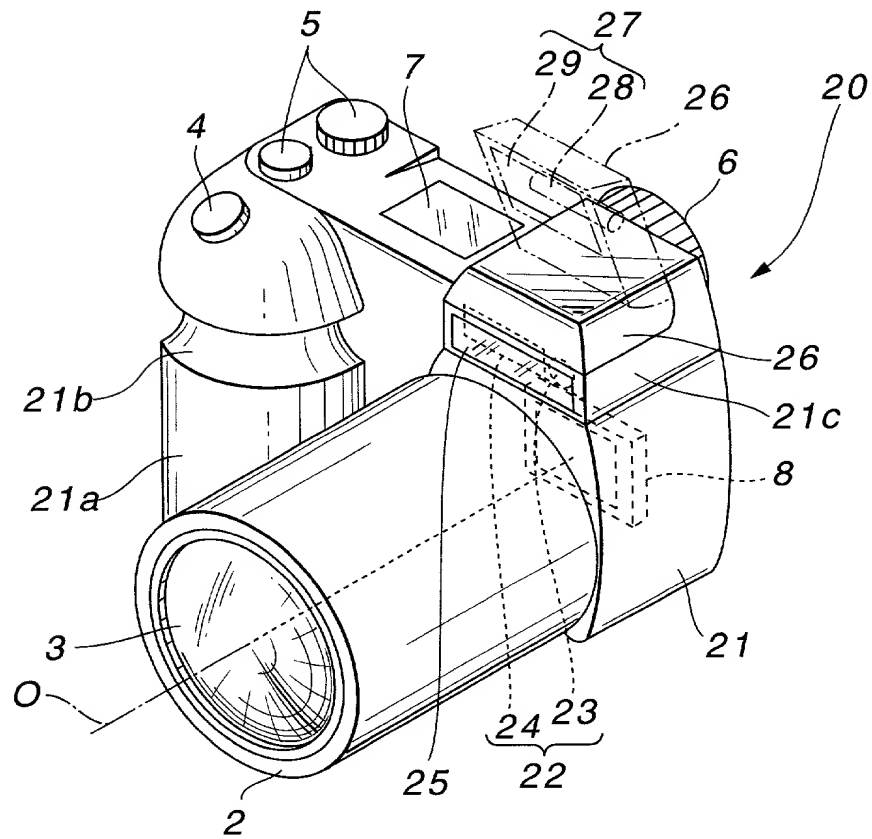


FIG.4

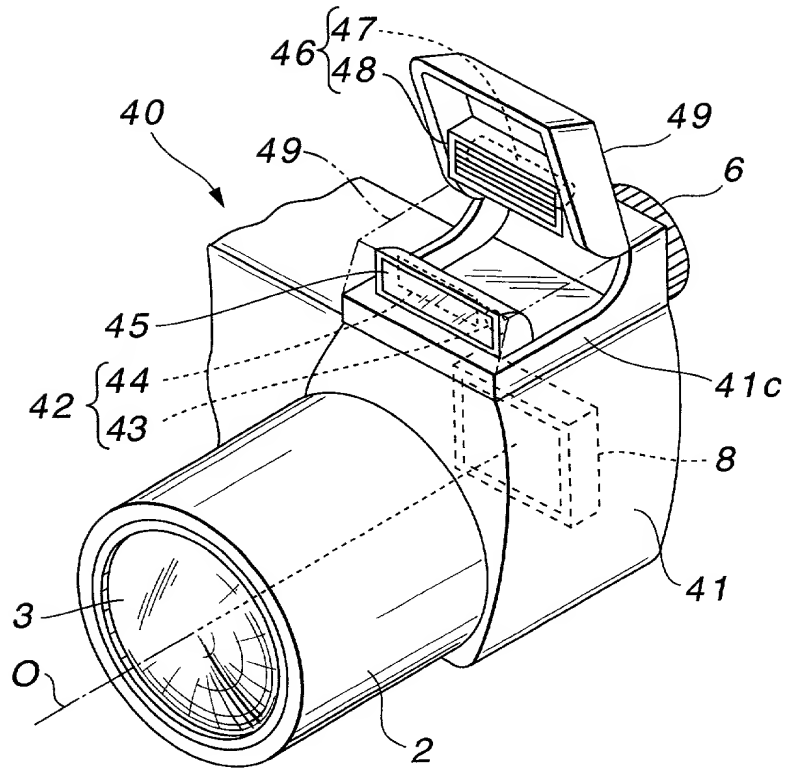


FIG.5

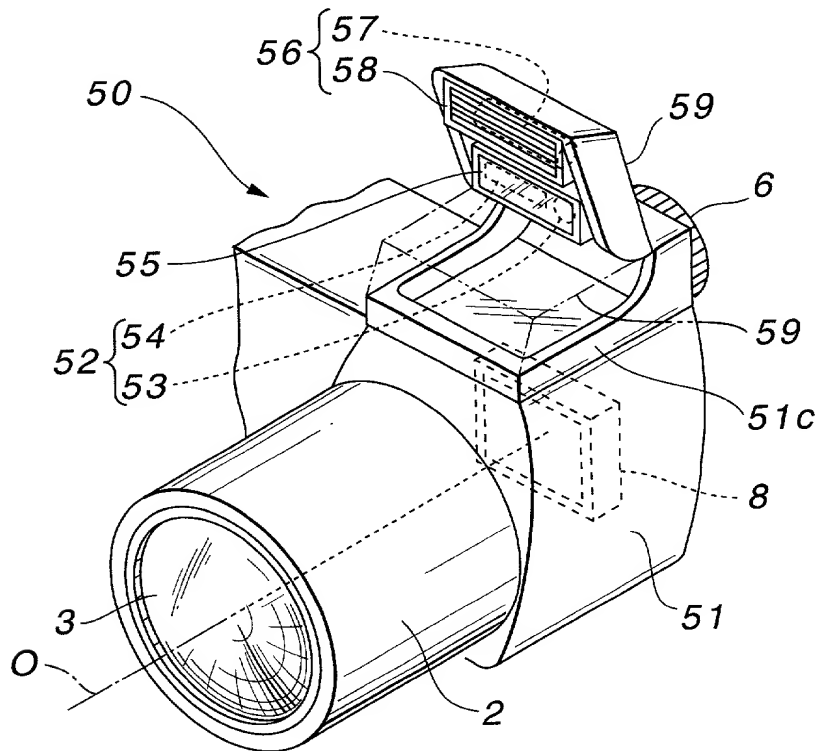


FIG.6

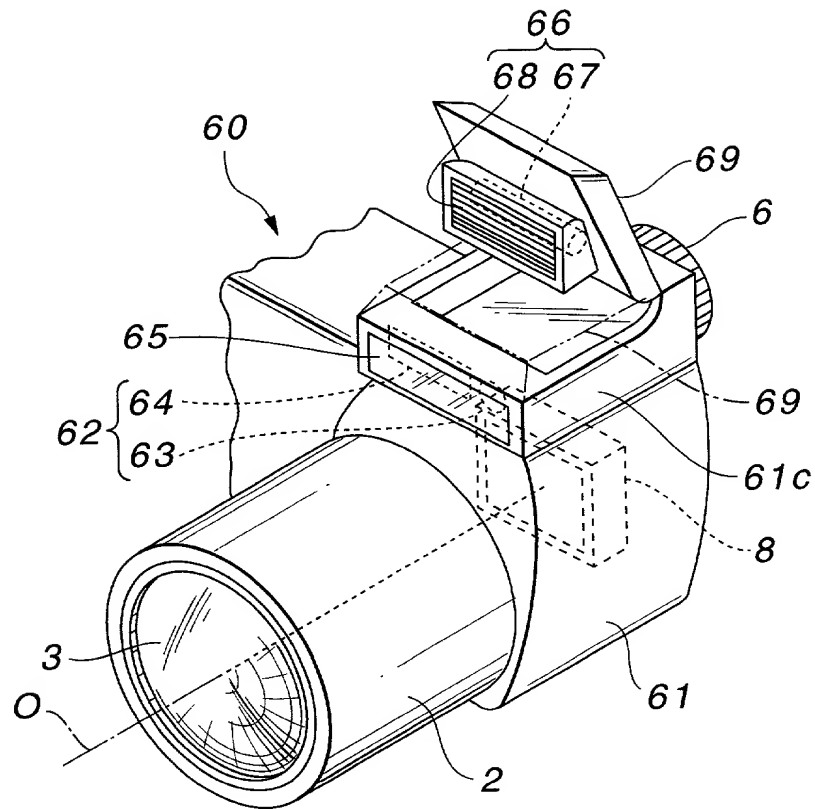
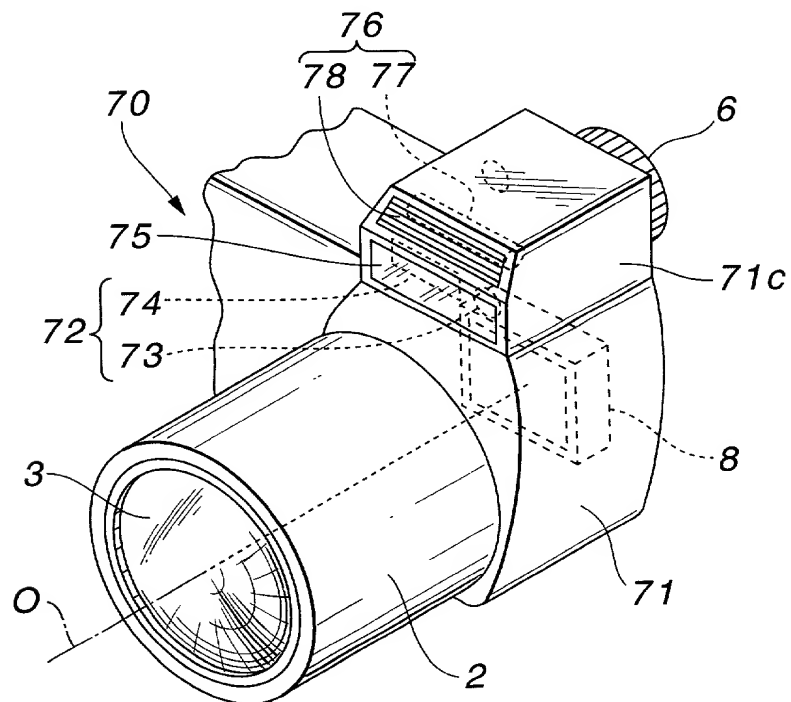


FIG.7



Declaration and Power of Attorney for Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

私は、以下に記名された発明者として、ここに下記の通り宣言する：

As a below named inventor, I hereby declare that

私の住所、郵便の宛先そして国籍は、私の氏名の後に記載された通りである。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明について、特許請求範囲に記載され、且つ特許が求られている発明主題に関して、私は、最初、最先且つ唯一の発明者である（唯一の氏名が記載されている場合）か、或いは最初、最先且つ共同発明者である（複数の氏名が記載されている場合）と信じている。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

CAMERA

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the specification of which is attached hereto unless the following box is checked:

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☐ was filed on _____
as United States Application Number or
PCT International Application Number
_____ and was amended on
_____ (if applicable)

私は、上記の補正書によって補正された、特許請求範囲を含む上記明細書を検討し、且つ内容を理解していることをここに表明する。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above

私は、連邦規則法典第 37 編規則 1.56 に定義されている、特許性について重要な情報を開示する義務があることを認める。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56

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Japanese Language Declaration (日本語宣言書)

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I hereby claim foreign priority under Title 35, United States Code, Section 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application for which priority is claimed

Prior Foreign Application(s)

外国での先行出願

Priority Not Claimed

優先権主張なし

H11-333235

JAPAN

24/11/1999

☐(Number)
(番号)(Country)
(国名)(Day/Month/Year Filed)
(出願日/月/年)

2000-294539

JAPAN

27/9/2000

☐(Number)
(番号)(Country)
(国名)(Day/Month/Year Filed)
(出願日/月/年)

私は、ここに、下記のいかなる米国仮特許出願についても、その米国法典第35編119条(e)項の利益を主張する。

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below

(Application No.)
(出願番号)(Filing Date)
(出願日)(Application No.)
(出願番号)(Filing Date)
(出願日)

私は、ここに、下記のいかなる米国出願についても、その米国法典第35編第120条に基づく利益を主張し、又米国を指定するいかなるPCT国際出願についても、その同第365条(c)に基づく利益を主張する。また、本出願の各特許請求の範囲の主題が、米国法典第35編第112条第1段に規定された態様で、先行する米国出願又はPCT国際出願に開示されていない場合においては、その先行出願の出願日と本国内出願日またはPCT国際出願日との間の期間中に入手された情報で、連邦規則法典第37編規則1.56に定義された特許性に関わる重要な情報について開示義務があることを承認する。

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Application No.)
(出願番号)(Filing Date)
(出願日)(Status: Patented, Pending, Abandoned)
(現況: 特許許可、係属中、放棄)(Application No.)
(出願番号)(Filing Date)
(出願日)(Status: Patented, Pending, Abandoned)
(現況: 特許許可、係属中、放棄)

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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委任状: 私は本出願を審査する手続を行い、且つ米国特許商標庁との全ての業務を遂行するために、記名された発明者として、下記の弁護士及び/または弁理士を任命する。(氏名及び登録番号を記載すること)

POWER OF ATTORNEY As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

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(Supply similar information and signature for third and subsequent joint inventors.)